



# Outline

SNUMI WGM  
November 28, 2006

(\*\* means we have some slides on this)

- What did we hear from the Director's Review?
- Moving toward a baseline
  - Scope definition (including some reductions)\*\*
  - Funding profile\*\*
  - Staffing plan – NuMI & Kickers are our biggest concerns
  - Baseline review: if/when
- Initiating a PMG (monthly reports)
  - When?
  - Relationship to Proton Plan PMG
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  - Packaging
    - CD0 timescale, etc. (start soon?)
  - People and timeline\*\*
- A couple other questions
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  - MI65 Expansion (some push to include on PP2, M&S too much?)\*\*



# Scope definition (including some reductions)

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WBS	Name	Cont %	Labor	M&S	Total
1	PP2	41%	\$13,136	\$20,307	\$33,443
1.1	Booster Upgrades	30%	\$139	\$518	\$657
1.2	Recycler Upgrades	36%	\$4,540	\$11,697	\$16,236
1.3	Main Injector Upgrades	31%	\$571	\$1,091	\$1,662
1.4	NuMI Upgrades	62%	\$2,665	\$6,101	\$8,766
1.5	Beam Physics	37%	\$463	\$35	\$498
1.6	Project Management	30%	\$4,759	\$865	\$5,624

- M&S: \$20.3M FY06\$
  - Need to get to ~\$17M base cost (FY07\$?)
    - Roughly \$17M\*1.4 (overhead)= \$24M guidance
  - Reduce by ~\$3.3M



# Possible Reductions

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	<b>FY06 \$K</b>	<b>\$5,608</b>
1.1	Booster RF System 15 Hz Upgrade	\$518
1.2	Recycler 53 MHz RF (2 extra cavities)	\$400
1.2	Recycler 5+6 slip stacking vs. 6+6 (no gap clearing kicker)	\$1,000
1.4	NuMI Spares	\$1,177
1.4	NuMI Items we probably don't need (horn 1 module, horn 2, RAW systems modifications, hadron monitor)	\$1,393
1.4.2.3.3	Work Cell Upgrade	\$695
1.4.2.3.4	Radioactive Component Removal Plan	\$425

- Easiest thing for PPP2 (need \$3.3M):
  - Spares: \$1.6M
  - NuMI Items we hope we won't need: \$1.4M (probably can't remove all this)
- If can't use spares it is much harder and we need to think about it more, then:
  - NuMI Items (\$1.4M - probably can't remove all this)
  - 5+6 slip stacking (~\$1M)
  - Booster 15Hz (\$518K)
  - Recycler extra cavities (\$400K)
- Nervous about moving work cell and radioactive component work off-plan, also nervous about removing Booster 15Hz and recycler cavities....



# Scope definition (including some reductions)

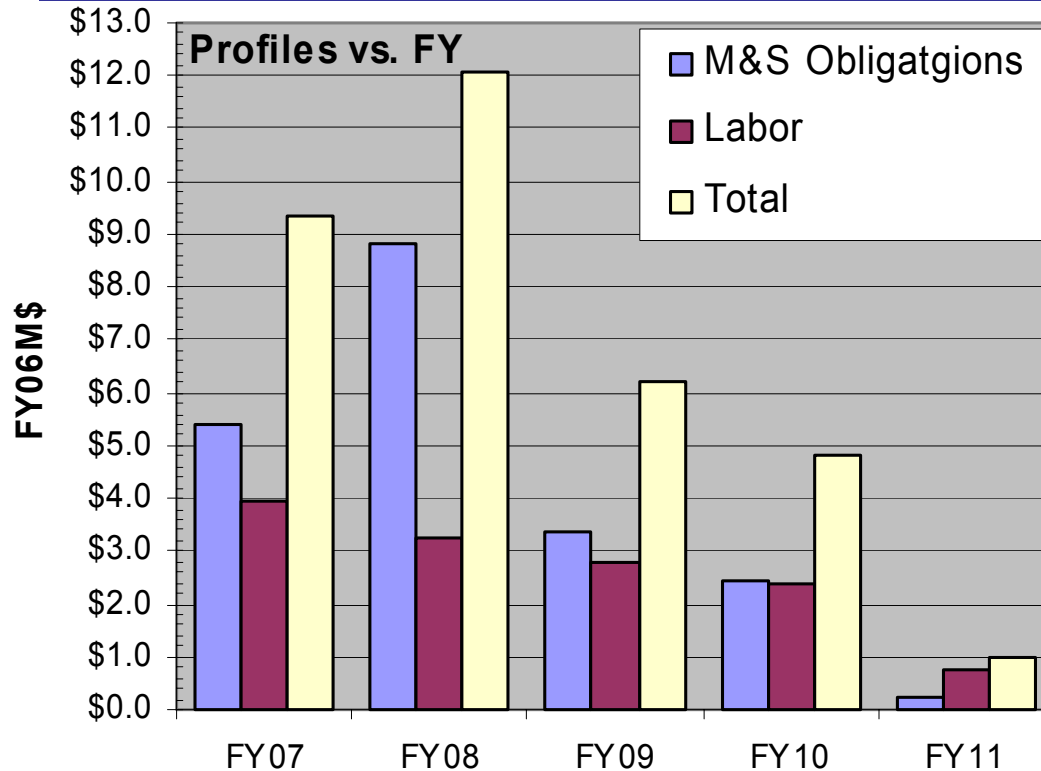
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<b>Spares:</b>	target	\$57
\$1,177	target carrier	\$187
	baffle	\$23
	horn 1	\$390
	horn 2	\$520
<b>May not need:</b>	horn 2	\$520
\$1,393	horn 1 module/hanger	\$383
	RAW upgrades	\$156
\$1,072	New Hadron Monitor	\$165
	stripline cooling mods.	\$169



# PP2 Profiles vs. FY

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Need to level resources:  
Both labor and M&S

- Move what we can from FY08 to FY09
- Can move from FY07 to FY08 ( ~ \$3.2M)
  - Thus FY07: \$5.4M becomes \$2.2M
- Must have an achievable schedule at the same time
- FY08 is a big year.

	FY07	FY08	FY09	FY10	FY11	Total
<b>M&amp;S Obligations</b>	\$5.4	\$8.8	\$3.4	\$2.5	\$0.2	\$20.3
<b>Labor</b>	\$4.0	\$3.2	\$2.8	\$2.4	\$0.7	\$13.1
<b>Total</b>	<b>\$9.4</b>	<b>\$12.1</b>	<b>\$6.2</b>	<b>\$4.8</b>	<b>\$1.0</b>	<b>\$33.4</b>



# PP2 Labor Needs

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	Total FTE-yrs
AD Design/Drafter	18.3
AD Electrical Engineer	12.1
AD Electrical Tech	18.2
AD Mechanical Engineer	22.3
AD Mechanical Tech	27.8
AD Physicist	25.1
AD RF Engineer	1.6
AD RF Tech	2.8
TD Drafter	0.6
TD Electrical Engineer	2.9
TD Mechanical Engineer	3.8
TD Mechanical Tech	15.7
TD Physicist	1.1
Total	161.8

## Main concerns:

- AD Mechanical Engineering
- AD Mechanical Tech
- TD Mechanical Tech
- AD Designer/Drafter
- Need to know if this resource amount is achievable in AD and TD
  - Can contract out MT work
- Project is 3.5 - 4.5 years long
  - NuMI portion 1 year longer than accelerator portion



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# SNUMI People

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- SNUMI Management structure was put together with an eye to phase II
  - Does not include the Accumulator, would need to add if it once we get beyond the pre-conceptual phase
  - Do need additional people to work on phase II concepts (can't all be phase I people - not enough manpower)
  - Conceptual Design Team: (all at 20-50% level of effort)
    - Team Leader (Ioanis)
    - RF Engineer (Joe Dey?)
    - Beam Line designer (Dave Johnson)
    - Mechanical engineer & drafter (??)
    - Person to work on each: Booster, Accumulator, Recycler and MI Accelerator Physics (Bob Zwaska with ??? ...Steve Werkema? (25%), Jim Lackey? (25%))
- Require a significant R&D effort in the next few years In order to make the correct choices to plan for PP2 & SNUMI upgrades

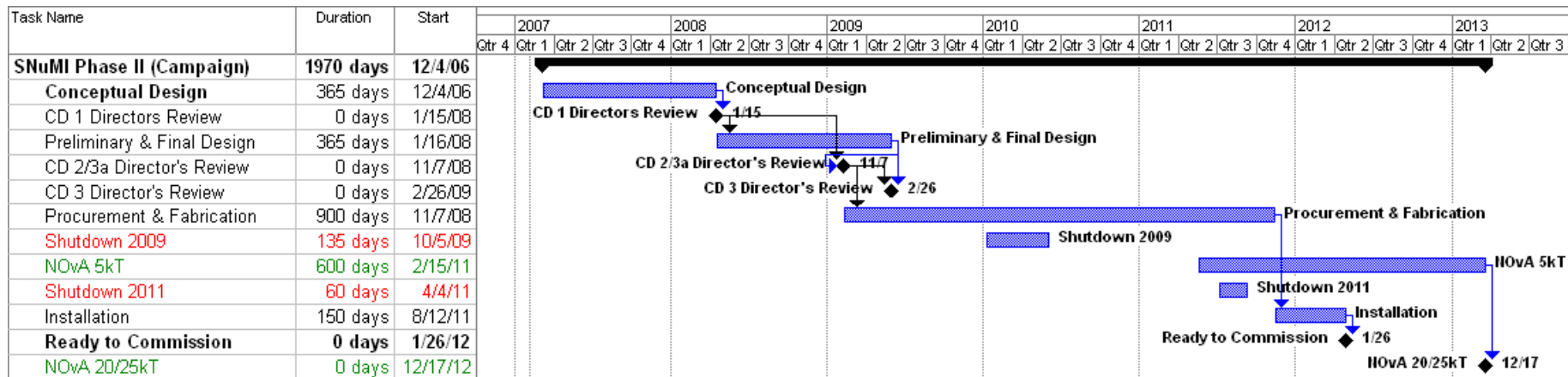




# SNUMI Timeline

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Campaign given ample resources: Complete 1/12

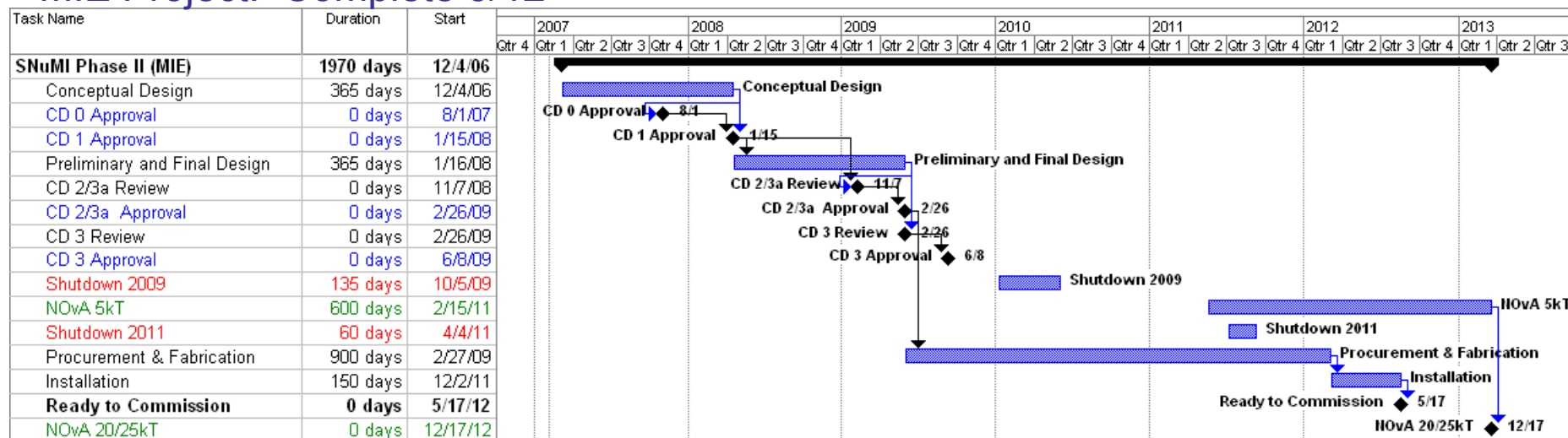




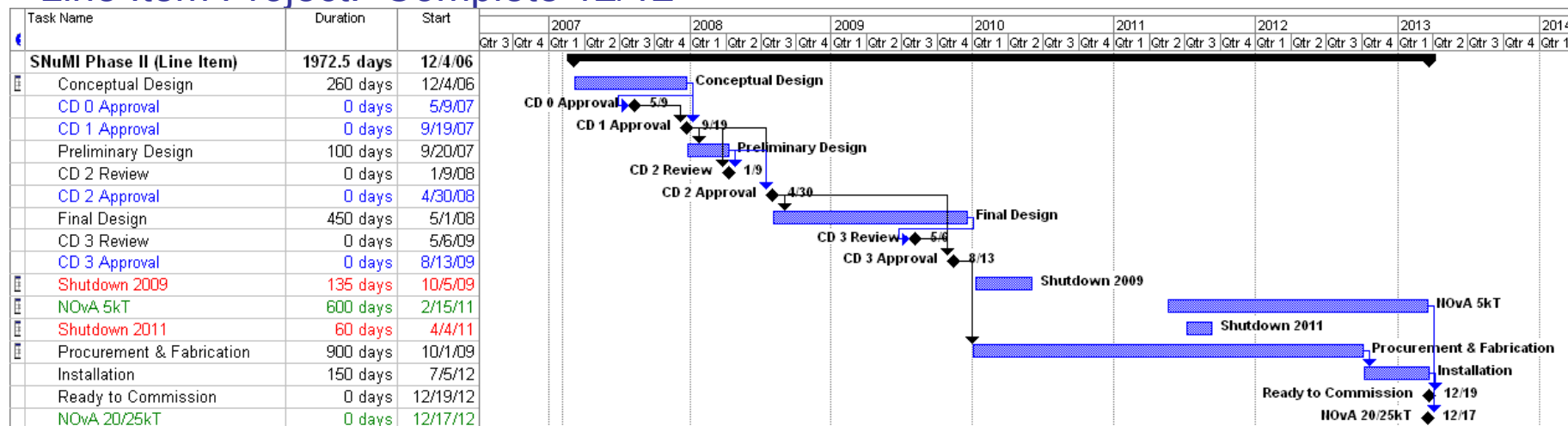
# SNUMI Timeline as Project (MIE and Line Item)

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## MIE Project: Complete 5/12



## Line Item Project: Complete 12/12





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# MI65 Expansion

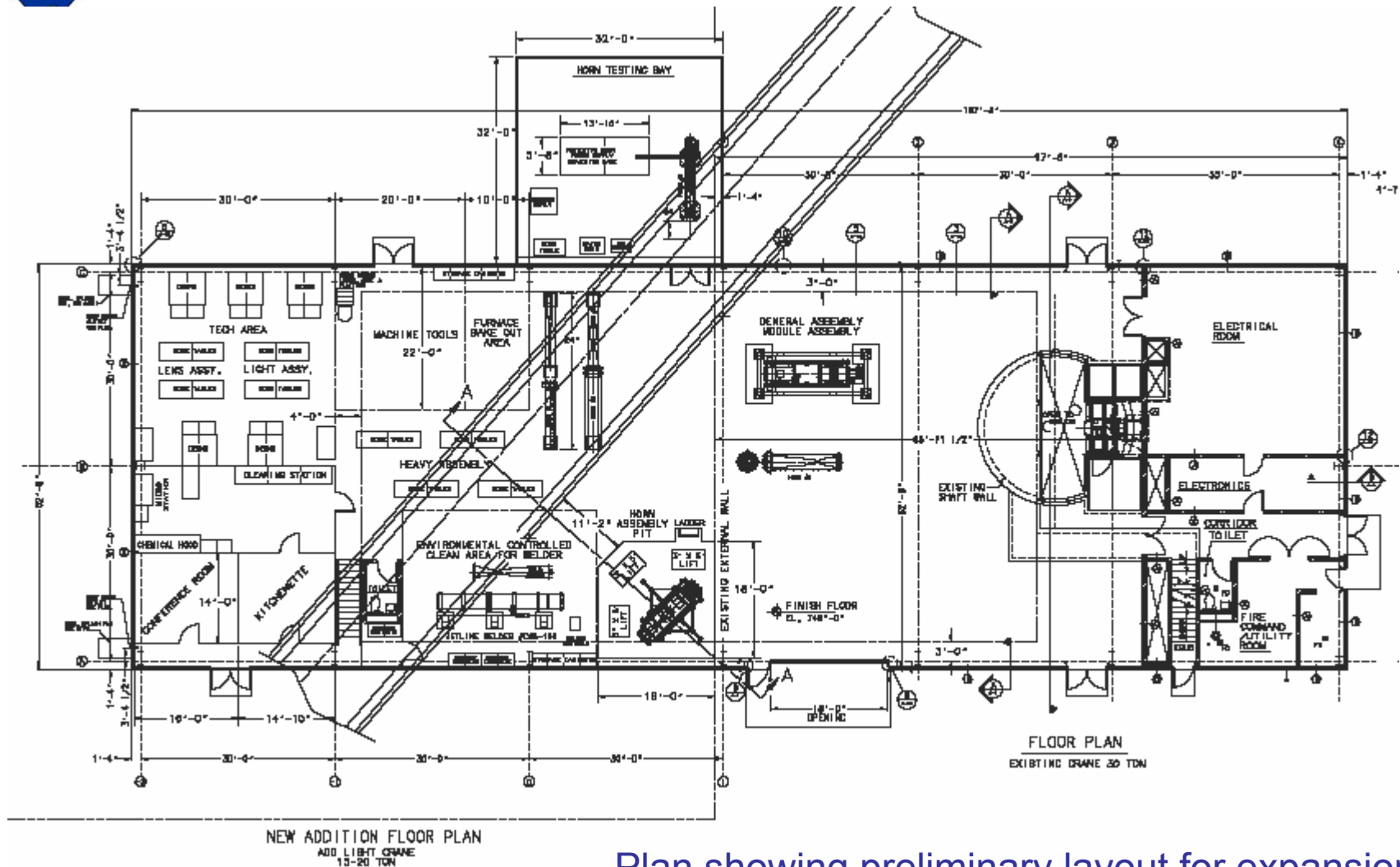
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- Expanding MI65 to support NuMI Target/Horn production
- Conceptual planning over past year with Pat Hurh
- Included two schemes
  - Without PD/HINS tunnel under building
  - Accommodating PD/HINS tunnel under building
- Facility would provide
  - storage, testing area, module/stripline block assembly area for entire spares effort that is not available today
  - increase productivity and efficiency of spare production over current MI8 location
  - SNUMI also adds many "features" that require space including coffin building/staging, tele-manipulator servicing/practice
- Estimated cost fully burdened is about \$5M without provisions for tunnel underneath



# MI65 Expansion

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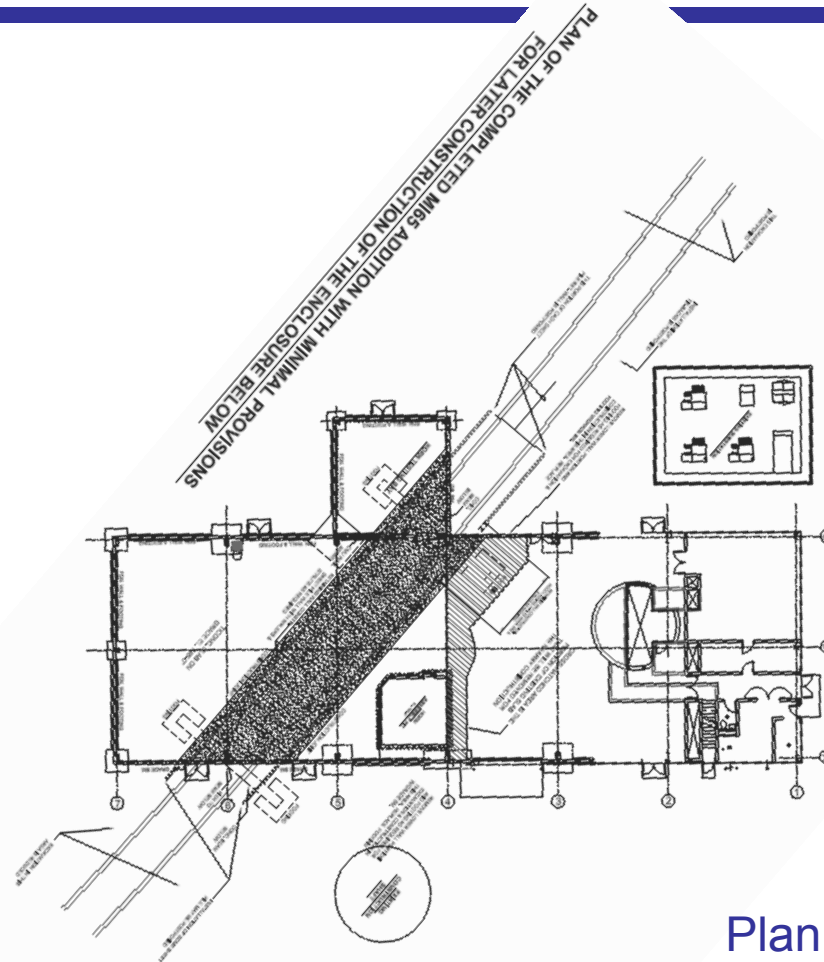


Plan showing preliminary layout for expansion



# MI65 Expansion

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Plan showing tunnel  
under MI65 Expansion